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PROBABLE *ENCEPHALITOZOON* INFECTION OF THE DOG

BY

W. PLOWRIGHT,

VETERINARY RESEARCH OFFICER, KABETE, KENYA COLONY

AND

G. YEOMAN,

VETERINARY OFFICER, TANGANYIKA TERRITORY

INTRODUCTION

A subacute or chronic infection of a litter of puppies has been described by Plowright (1952), the outstanding pathological feature being the combination of an encephalitis with granuloma formation, together with a tubular and interstitial nephritis. An organism, morphologically identical with *Encephalitozoon cuniculi*, was demonstrated in some of the lesions of both the brain and kidney. The same parasite has now been encountered in tissues of two litter-mate puppies from Tanganyika, one of which died rapidly, the other after a more prolonged illness. Both showed an encephalitis, whilst a nephritis of a peculiar type was found in the subacute case.

HISTORY AND SYMPTOMS

The first subject (Puppy A) was a black spaniel-type female puppy about two months old, located in Iringa, Tanganyika Territory. On March 8th the owner noticed a sudden marked change in behaviour and temperament. The animal became vicious, making numerous attempts to bite people ; on several occasions also, it went apparently " mad " —rushing about in a wild and uncontrolled manner. No other symptoms, apart from constipation, were seen until March 11th, when it became dull and off its food. On the 12th the puppy started to vomit copious amounts of a colourless frothy fluid and periodically emitted unnatural howling noises. When examined at 10 o'clock on the evening of this day it was found *in extremis*, showing uncontrolled spasms of limbs and jaws. Voluntary movement of the jaw was still possible, however, as the dog snapped at the hand. Breathing and pulse were rapid, the temperature was 103·2° F. ; the mucous membranes were a dirty greyish colour and the faeces soft, containing fragments of stone and brick. Small hard lumps could be palpated in the stomach and intestines. The puppy died on the following day at about 5 a.m. (the fifth day of the disease) and material was removed for rabies diagnosis.

On March 29th, following a preliminary laboratory report, the bitch and other members of the litter were examined. The former and one male puppy were apparently normal. A female puppy (Puppy B) was thought to have had symptoms attributable to ascariasis. On March 24th it had suddenly bitten a person and subsequently gone into a typical epileptiform fit. Penicillin was prescribed. Following this incident it became dull and off food, but remained quiet under mild sedatives. On March 28th it showed a catarrhal ocular discharge and a patchy eczematous condition of the skin of the abdomen. The breath was foul, mucous membranes a dull greyish pink, pulse rapid, temperature 102·8° F. An examination of the eye revealed a dull greyish retina with darker " smoke-wisp " foci, the venous circles were obscured and the optic disc had a dull ill-defined appearance. This animal died on April 4th, *i.e.*, after a course of 11 days.

Post-mortem EXAMINATION

Puppy A

There were petechiae of thymus, epi- and endocardium. The lungs showed a patchy consolidation ; the spleen was enlarged.

Stomach contents consisted of frothy mucus, a few whole peas and corn seeds, splinters of wood, small pieces of red brick, sand and grit. Patches of recent mucosal haemorrhage were observed. In the jejunum and ileum the mucosae were catarrhal, with rare but marked patches of haemorrhage and fresh red blood in the lumen.

The caecum showed marked recent haemorrhagic ulceration, and the rectum longitudinal haemorrhagic lines.

Petechiae were present in the cortex of the kidney ; the bladder serosa was haemorrhagic towards the fundus, and a marked haemorrhagic cystitis, especially of the mucosal folds, was seen.

On skinning the head a symmetrical diamond-shaped area of haemorrhage appeared beneath the periosteum of the cranium ; meningeal congestion was the only abnormality noted in the brain. Half the brain was fixed in 20 per cent. formalin, the other half placed in 50 per cent. glycerine and forwarded by air to Kabete.

Puppy B

Post-mortem examination was carried out by an African veterinary assistant, who noted no foreign bodies in the alimentary tract or significant changes in the mucosae.

The kidneys, heart, spleen, pancreas and lungs were fixed complete in 5 per cent. formalin, together with portions of the liver and adrenal. Half the brain was placed in 20 per cent. formalin, half in 50 per cent. glycerine. These organs were examined on arrival at Kabete.

The lungs were oedematous. The pericardial sac contained a large quantity of a friable, granular, fibrinous deposit, mixed with an excess of watery fluid ; the epicardium showed slight patchy roughening, with some areas of membrane-like fibrin deposit. There were pale foci of apparent myocardial degeneration and the cardiac lymph gland was enlarged.

The kidneys were swollen, whilst the overlying peritoneum could not easily be stripped off. The surface showed a slightly irregular, bosselated appearance, more easily seen after removal of the capsule which was lightly adherent. On incision, the cortex was pale, particularly towards the boundary zone.

The spleen was enlarged with prominent and numerous Malpighian corpuscles ; the liver showed no significant change.

PRELIMINARY LABORATORY EXAMINATION

Puppy A

Thick and thin blood smears taken the day before death showed no parasites ; some nucleated red cells were present and a slight degree of polychromasia.

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In view of the suspicion of rabies, rapid paraffin sections of hippocampus and cerebellum were prepared from formalin-fixed tissues and stained by Goodpasture's method to demonstrate Negri bodies. These showed an intense meningo-encephalitis with extensive necrosis, haemorrhage, diffuse polymorph infiltration and presence of small granulomata. No Negri bodies were found but large numbers of parasites morphologically identical with *Encephalitozoon* were seen in and without the lesions described.

Glycerine-preserved material was emulsified in saline and inoculated intracerebrally into 12 mice and two rabbits. One of the latter died within 24 hours but no deaths attributable to *Encephalitozoon* infection or rabies occurred in the mice or surviving rabbit in the month following inoculation.

Puppy B

A saline emulsion of the glycerine-preserved brain tissue was inoculated intracerebrally and intraperitoneally into two groups of six mice. No deaths attributable to rabies or *Encephalitozoon* occurred during the month following inoculation.

HISTOPATHOLOGY

Puppy A

Further sections of brain (occipital, parietal and frontal cortex, medulla, cerebellum, caudate nucleus) were then prepared for examination. The following staining procedures were employed : haematoxylin and eosin, thionin blue (for neurones), Loyez method for myelin and Wright and Craighead's fuchsin-methylene blue for *Encephalitozoon*.

There was a slight patchy mononuclear infiltration of the meninges with only a few small perivascular granulomata such as described previously (Plowright, 1952).

The most severe lesions were to be observed in the central white matter of the cerebrum and, to a lesser extent, in the cerebellum. These showed frequently diffuse cellular infiltrations composed of polymorphs and lymphocytes, with numerous scattered foci of necrosis in which endothelioid cells were numerous, together with degenerating polymorphs. It was noteworthy that many of the polymorph nuclei were undergoing, or had undergone, karyorrhexis, with formation of large irregular chromatin particles. The vessels of these areas often exhibited a thickening of their adventitia due to mononuclear infiltration ; some of them showed necrosis of their walls and were associated with discrete haemorrhages. One focus, 2 to 3 mm. in diameter, of dense lymphocytic and polymorph accumulation, was found in the white matter of the occipital cortex. There did not appear to be any damage to myelin sheaths except when these were involved in focal necrotic lesions or displaced laterally by them. A few small diffuse or discrete foci were found subependymally and within the choroid plexus of the fourth ventricle. The medulla and pons, as also the hippocampal white matter, appeared to be much less involved.

Lesions of the cerebral and cerebellar cortices usually consisted of well-defined aggregations of polymorphs and endothelioid cells, with some necrotic debris of nervous tissue elements. Such lesions were not numerous in the cerebellum, and, when they did occur, were usually in the molecular layer or partly within both molecular and granular layers. Nerve cells within, and sometimes near, these foci in the grey matter commonly showed degenerative changes or necrosis. A parasitic pseudocyst which had just burst was found within a definite Purkinje cell remnant. This recalls the frequent occurrence of *Toxoplasma* pseudocysts in nerve cells. Thickening of the adventitial layer of the blood-vessel walls was marked in some areas, though the distribution of affected vessels was somewhat irregular. Small localised haemorrhages could also be found in the grey matter.

Parasites were found singly or in small irregular clumps, either free or included in the endothelioid cells of the affected areas. Pseudocysts were not difficult to demonstrate lying free, with no apparent reaction, or within the endothelium of affected or apparently normal vessels. Their appearance was as previously described (Plowright, 1952).

No other tissues from this animal were available for examination.

FIG. 1.—Cerebral white matter, Puppy A. Paraffin section. H. and E. Note diffuse cellular infiltration, small granulomata and thickening of vessel walls. (× 100.)

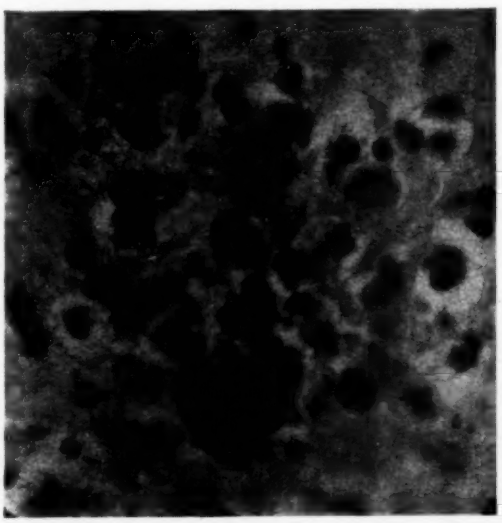

FIG. 2.—Granuloma of cerebral white matter, with polymorphs, necrosis and a large group of parasites (not a pseudocyst). Modified Wright and Craighead stain—counter stain haematoxylin. (× 100.)

Puppy B

All the material from this puppy was badly preserved, and only sections stained by haematoxylin and eosin were examined.

Kidney. There was present an interstitial and tubular nephritis similar to that previously described in subacute cases of *Encephalitozoon* infection of the dog. Characteristic features were the considerable medullary involvement and wide radiating streaks of cellular infiltration and fibrosis in the cortex, especially along the medullary rays (Plowright, 1952). In this case, however, only one or two dense focal accumulations of plasma cells and lymphocytes were found and a granular yellowish-brown pigment was frequently present within the lumen and epithelium of the tubules. No parasites could be demonstrated.

Typical well-defined granulomata were found in liver sections (Plowright, 1952). Sections of lung tissue revealed extensive alveolar oedema ; those of the pancreas showed rare, small, perivascular and interstitial mononuclear foci.

The cardiac lymph gland was oedematous with dilatation of sinusoids by fluid and proliferating free macrophages. Polymorphonuclear leucocytes, many degenerating, were also frequent. The spleen showed a diffuse hyperplasia of reticular cells and fixed macrophages. No parasites were demonstrable in any of these organs or in sections of the adrenal.

The meninges showed the presence of typical granulomata with occasional diffuse infiltrations, particularly in the sulci. There was but slight extension into the cerebellar cortex, this being in the form of loosely arranged mononuclear and glial foci in the molecular layer, or slight perivascular infiltration. In the cerebrum the most severe lesions were found in the white matter ; they took the form of extensive diffuse infiltrations by plasma cells and lymphocytes, together with glial proliferation, of granulomata and of narrow perivascular cuffing by mononuclear cells. The cortex showed perivascular lesions, often characterised by proliferation of adventitial cells, and granulomata, usually well defined.

Parasites were found in loose clumps within the diffuse and focal lesions of the brain and meninges ; pseudocysts were also demonstrable in the same situations, and within endothelial cells of affected and normal vessels. Pseudocysts without surrounding reaction were present in the cortex and central white matter, whilst one was found within a Purkinje cell.

Discussion

Two puppies, of the same litter, suffering from an encephalitis were found to have within the brain tissue large numbers of an organism which, in morphology and staining reactions, appeared to be identical with *Encephalitozoon cuniculi*. In one animal the co-existence of granulomata in the liver and of an interstitial and tubular nephritis strongly supported the diagnosis, although no parasites were seen in these organs. It was recognised early in the history of the disease, however, that demonstration of the parasite in the kidney may be difficult, if not impossible, in the later stages of infection of the rabbit (Twort, 1922 ; Smith & Florence, 1925).

Attempts to transmit this condition to laboratory animals, by the inoculation of brain material preserved in glycerine, were unsuccessful ; Perrin (1943) states that in 50 per cent. buffered glycerine or Tyrode's solution the parasite survives several weeks at 4° C. The material studied here was exposed, in transit, to high environmental temperatures, for two or more days and the failure to set up the disease with it is not surprising.

That *Encephalitozoon* can produce an acute and extensive meningo-encephalitis in the dog is shown by the first case. The widespread necrosis and polymorph infiltration in Puppy A recalls similar alterations associated with toxoplasmosis more than any other case of this infection hitherto seen. The important differential features of *Encephalitozoon* compared with *Toxoplasma* may be summarised as follows (see Perrin, 1943) :—

(*a*) Organisms stain very lightly and indistinctly with haematoxylin and eosin.

(*b*) They are demonstrated clearly by Wright and Craighead's (1922) method as bright pink structures, 1 to 2μ only in length, with a distinct tendency to polar staining and a clear central area. The limiting membrane is well defined and one end of the organism is often wider and more rounded than the other.

(*c*) They stain black with the usual haematoxylin methods designed to show myelin [*i.e.*, those in which iron alum is used to mordant the haematoxylin].

(*d*) Pseudocysts with no definite wall are filled with closely packed though clearly distinguishable organisms.

Clinically, too, the condition did more closely resemble toxoplasmosis than the cases of *Encephalitozoon* infection observed earlier. Opinions still differ as to whether *Toxoplasma* and *Encephalitozoon* are different parasites ; *e.g.*, Cohrs (1951), in an article dealing with toxoplasmosis, states that they are to be regarded as identical and quotes certain older observations on *Encephalitozoon* infection in the dog (Kantorowicz & Lewy, 1923 ; Peters & Yamagiwa, 1936) as descriptions of toxoplasmosis. Perrin (1943), as a result of considerable experience, had no doubt that two species were involved.

It is of interest to record that *Encephalitozoon* pseudocysts are not infrequently found at Kabete in the brains of mice inoculated with suspected rabies material. This applies both to those mice which definitely die of rabies and those in which no Negri bodies are found.

Summary

Two further cases of *Encephalitozoon* infection in the dog are described. The animals involved were litter-mates of 8 to 10 weeks of age. One was the first acute case of this disease hitherto observed. Clinically, it showed some resemblance to rabies. Attempts to transmit the infection to laboratory animals with glycerine-preserved brain material were unsuccessful.

Acknowledgment.—This paper is published with the approval of the Directors of Veterinary Services, Kenya Colony and Tanganyika Territory.

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Weekly Wisdom

The most satisfying definition of freedom is, to my mind, " the right to make experiments in the art of living."—G. M. Young in *The Sunday Times.*

THE ORGANISATION OF MODERN VETERINARY PRACTICE*

BY

R. H. SMYTHE, M.R.C.V.S.,
Nottingham

May I commence by saying that in this talk I do not propose to tell anyone how he or she should run a practice. We could discuss this subject of organisation of practice either in the concrete or in the abstract, and it is my intention to deal briefly with the former—the everyday affairs of our existence—and to concentrate largely upon the latter : practice in general, with a special eye to the future ; whether practice, as it is organised at present, is completely satisfactory, and, if not, in what direction or by what means we may effect an improvement. I am also interested in the position which our profession occupies in the estimation of the thinking section of the public, and anxious that, with the progress of time, our prestige shall continue to increase at the same rate as it has done during the past decade. May I begin, then, by considering shortly our everyday practice ; let us attempt to decide whether or not we are making the best of that, or whether adjustments are necessary.

We might commence by wondering why we are in practice at all—and, if we are older practitioners, also provide the easy solution : we have never yet saved sufficient money to enable us to get out. That may not be the whole reason, of course, because some of us seem to enjoy hard work and poverty, or it may be that work has become a habit and our daily actions may be regarded as a series of conditioned reflexes. It is, however, to the younger men that I would address the question, "Why are you a practitioner?" Is it because you possess an innate love for animals and are happy in promoting their welfare? Could all of you honestly cry "perish the thought" if one ventures to suggest that, here and there, the primary approach to the profession is as a means to an easy living, with lots of freedom?

In a discussion of the organisation of veterinary practice, it might be fitting to take a further glance at the personnel at present attempting to enter the profession, as the whole future of practice depends upon their selection. How are the entrants selected? So far as one can ascertain, each is carefully screened before being granted admission to a teaching school, but one may be forgiven for wondering if selection is always based on the right attributes. Does it really matter where these men or women were educated, whether a man earned a rugger cap or what were his tastes in literature? If I had to select young men to enter our profession, men who would do it credit, I would insist upon (*a*) a love of animals ; (*b*) gentleness, both in thought and manner ; (*c*) a modicum of common sense ; and (*d*) capable hands. In place of the usual scrutiny, I would note how he tied his shoe-laces. I would give him three short lengths of string and ask him to tie them together. You would be surprised to know how many Honours men fail to tie a simple knot, and I would watch him peel a potato with a Bard Parker scalpel. There would be a brighter outlook for the future of the profession, I believe, if admission depended upon the characteristics I have just outlined, rather than upon abnormal academic ability and school records.

When these young men have obtained their diplomas, what will they do? Probably some of those possessing the academic outlook will stay on in the teaching institutions, and provided they are not tempted into practice, eventually may become teachers. Others will seek research posts or appointments ; some will join fathers or brothers in practice ; those with money or optimism, or both, may start up on their own account. But the great majority will come to us as assistants.

I do not propose to go far to-day into the matter of fees and overheads, unless later you wish to question me, but I would point out that at the present average percentage of profit, a young assistant has to increase the gross returns of the practice by at least £1,500 per annum, in order to pay his salary alone. When he arrives, he will need, immediately, some means of transport. Unfortunately, bicycles are out of date, so it will be necessary to provide him with a car. In some cases the choice lies between purchasing the car and maintaining it, or an arrangement whereby the assistant produces the car and the principal maintains it, plus so much a mile for obsolescence. In the few instances in which I have fallen for this scheme, the total running cost per mile has often exceeded 1s. Nowadays one is unlikely to obtain a new car, and, in my own practice, the running costs of secondhand cars, maintained by the principal for the use of assistants, have ranged from as little as 6d. to as much as £1 per mile! If one should be lucky enough to obtain a new car and to retain it for one's own use, the inclusive running costs, in a fairly flat country, should not exceed 4½d. per mile over the first 18 months of its life, plus a further ½d. per mile for each succeeding three months' use.

Just a word, in passing, on the subject of drugs. Our bills for these commodities have trebled since those still not-so-far off days before we made the acquaintance of the sulpha drugs and the wide range of modern antibiotics. Our general overheads have kept pace in every way with our drug bills, but our gross receipts have not yet made such rapid progress. The drug travellers who traded in ammon. carb. and nux vomica seem to have been superannuated, and in their place we greet a biochemist who sells us a new range of antibiotics every time he calls.

Can anyone present tell me where this losing battle, which the practising veterinary surgeons are now waging with the economic position, is going to end? Without the Ministry's quarterly cheque for services rendered, most of us, at least south of the Border, could scarcely carry on, considering the present low percentage of profit. Certainly we would be compelled to reduce our expenditure on assistants' salaries.

In small-animal practice, the operating room and the distemper vaccinations provide the returns which are lacking in this type of practice from Ministry cheques. Once again, in small-animal practice, the visit and medicine section (especially when one includes losses from bad debts) fails to pay its way.

The whole question of the economics of veterinary practice is becoming increasingly urgent. It has formed the subject of divisional meetings, but when resolutions from Divisions go to Council, they are referred back to the Divisions for local arrangements to be made. This might be all right if it were merely a question of the minimum fee for a calving, or a milk fever case, but the situation is much more deeply rooted than is generally realised, and has now gone far past the stage when it could be discussed usefully at divisional level.

Now, having been as optimistic as I am able concerning our daily work, shall we proceed to our main consideration —practice in the abstract—and consider the future which confronts every one of the younger men in practice to-day? I am presuming, of course, that in that not-so-distant future, all the economic and political problems which

* Presented to the Scottish Metropolitan Division, B.V.A., at Edinburgh, February 27th, 1952.

jeopardise our existence, in different ways, will by then have been disposed of suitably.

My first question to you—and this especially concerns the younger members—is, " In 10 years from now, will you be content if practices are conducted profitably, but otherwise on exactly the same lines as they are to-day ? If not, what changes can you suggest which will provide a better service to patient and client than the one you are supplying now ? "

Let us consider, each one of us, the service he is offering to his clients. Whatever is said for or against, it must be admitted that it is a wide and very varied service, and we, the providers, are a profession of individualists. Each one of us is anaesthetist, surgeon, obstetrician, radiologist, clinician and bonesetter all in one. Any one of us is prepared, at instant notice, to deal with any and every kind of animal. We are ready to diagnose and treat any illness or carry out any type of operation, and, in the manner of the true conjurer, we are usually prepared to perform, merely with the aid of the apparatus and wherewithal concealed somewhere on or about our persons. We do not work as members of a team ; we are self-contained units. We have what it takes !

In what other profession would you encounter such versatility ? If your own medical adviser were to confide to you that he had started the day with a caesarean, inserted a vitallium pin in a navvy's femur, vaccinated half the children in a school, extracted a couple of wisdom teeth, diagnosed a case of small pox and set all the regulations into force, all before lunch, you might wonder if he were exaggerating a little, but if you were called upon to perform a similar list of duties in your own practice, you would not hesitate or be in the least surprised, even if they involved a 60-mile round.

The question I want to put next is this. If we grant that veterinary practitioners are clever and capable performers, is it reasonably likely that if one man is called upon to deal with every type of case, every species of animal, every sort of emergency, he is giving the best service possible or that he never needs specialised assistance in his problems ?

I do not want you to visualise our work as being entirely technical and performed by hand alone. A workman may be a good plumber if he deals always with the same kind of pipe and the same kind of breakage. But in dealing with flesh and blood we are dealing not with one particular type of breakage, but with a manifold variety of possibilities, permutations and combinations, which could be recognised and catalogued only by a practitioner whose reading and experience in every department of veterinary service was sufficiently complete to enable him to make a considered diagnosis, and who also possessed an equally complete understanding of the many loopholes which might give rise to error. Where shall we find this Superman ?

I submit to you that the vast amount of fresh knowledge which is being gathered in daily, together with the international pooling of information, makes it impossible for any one brain to retain even a fraction of the whole. This is where the individualist, attempting to cope with anything and everything which passes his way, comes badly unstuck.

To put the question in another way : Is our versatility eventually to be our undoing ? Are we, as general practitioners, gradually becoming embedded in a rut of commercial utilitarianism, whilst other scientific professions are specialising and so are passing us by ?

Are we catering ahead for the advancement of our ability and for greater prestige, or are we contentedly sitting on our haunches, a federation of self-satisfied utility men ?

I have not the least doubt some of you are saying as audibly as may be compatible with good manners, " What nonsense ! Look at our recent advances in therapeutics. Think of our new bone-surgery ! " Well, I have done so ! It is true that we now dish out sulphamezathine in place of aspirin, and we slice legs open (always with the umbrella of penicillin, of course !). Also, we drive steel pins into the medullary cavity where we used to encase the limb in plaster. But even in these matters we are mere copyists. So far as I am aware, we keep no records to find out whether our percentage of recoveries is greater when we use sulphamezathine, than previously when we used aspirin. As a rule, a little thought concerning the aetiology and the type of infection should convince us that sulphamezathine, in a great percentage of cases, should be neither better nor worse than aspirin. We pin bones to-day, regardless of whether the result will be any better or worse than that obtained from plaster, merely because to-day it is the custom or the fashion to pin fractures. Years ago the quack used to treat every case of colic, regardless of its cause, with linseed oil and turpentine. Is the practitioner any less empirical if he now treats every case of colic, also regardless of its cause, with pethidine and the stomach tube ?

Maybe you are wondering to what all this is leading. I am endeavouring to point out the danger which threatens a profession the members of which are mainly individualists, more or less isolated from each other, when many depend almost solely on their own limited knowledge.

The remedy, in my opinion, is specialisation. In other words, team work whenever it is needed, the pivot of the team being the veterinary practitioner and the other members consisting of a consultant, specialising in one particular subject (such as a group of diseases) and, lastly, the staff of a laboratory which might be attached to the present Veterinary Investigation Service or to a teaching institution or be privately owned.

Where are these specialists to come from ? They are not in existence at the present moment, or such as are in existence are tethered to institutions and are not freely available for personal visits. Obviously we shall require a good many such men. We need ophthalmologists, dermatologists, and all the other " ologists," and we want them available to give advice by 'phone, by letter or, in selected cases, to attend wherever the patient may be. This is a long-term scheme because, first, these men would have to be taught and it would be essential that they should have experience of practice, both before and after admission. The place at which they could best be taught would be a permanent post-graduate training centre. In order to staff such a centre, we should, at least in the beginning, need to enrol members of other professions. A point I would like to impress upon you is that all the existing knowledge of animals, their behaviour and their diseases is not the sole property of the veterinary profession. If you require an example of this write to the Ministry of Agriculture for a reprint from their Journal of January, 1952, dealing with the subject of " Improved Egg Quality," written by a man without veterinary degrees. Even if you lose your appetite for eggs after reading it, you will certainly find a feast of information within it, equal to anything you are likely to meet with even in *The Veterinary Record*.

A properly equipped post-graduate teaching centre is needed by every veterinary practitioner who has been in practice for at least five years. It would help the practitioner to keep up to date. Courses, however, should not be permitted to cover too wide a field at one time, but should be concentrated around one feature at a session. I would suggest here and now, that if any other university is anxious to found a veterinary school, it should first seriously consider whether it might not do more ultimate good for the profession if it directed its energies to the foundation of a per-

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manent post-graduate teaching institution, rather than one designed to turn out a number of new graduates, who, by virtue of the existing economic situation within the profession, may shortly have difficulty in finding practices sufficiently wealthy to maintain them. The employment of assistants is now much nearer saturation point than for many years past (*vide* advertising columns *V.R.* : applications for posts).

From the graduates of this school it might be possible to form panels of specialists. Some of these might remain as teaching staff, others possibly might return to their practices and be available for consultation in their own special sphere. The next question will be : "How will these practitioners manage to leave their practices to attend courses at a post-graduate centre ?" Well, like most of our problems, this is mainly a financial one, and it is my hope that if the powers that be approved of such a scheme and could be persuaded to see that it was not merely a necessity for the future permanence of the profession but also would be of inestimable value to the livestock industry of this country, it is just possible they might find it in their hearts to subsidise participants in the scheme or even to provide funds towards the establishment of a permanent post-graduate teaching institution. Such a scheme is not a matter for charity ; it must not seek help from public subscriptions, it should be State-sponsored or nothing. Either it is needed or it is not. If there be a need for it, then it is worthy of public funds in the interests of public welfare.

It might be suggested that the present colleges should be capable of running post-graduate classes, utilising their existing staff. In reply to this I would suggest that teaching students is an art and that the college staffs are especially adept at that branch of teaching. Moreover, they are fully occupied already. To attempt to teach a student Surgery and Medicine in little more than a year is a hopeless task in itself and leaves no time for extra classes for graduates. I am convinced that post-graduate teaching needs a new and separate centre and a specially trained and selected staff. I do not visualise that, at first, a post-graduate, whose name was enrolled on a panel of consultants, would receive a great number of calls on his services. These would come later, as soon as the idea had caught on with the practitioners. Until such time as he might be more fully employed, I would suggest a retaining fee on the understanding that the fees charged for personal attendance should be nominal and within the range of practical economics. Points such as these would need working out later. In the meantime, I offer you these suggestions in the belief that the crying needs of our profession are (1) Post-graduate tuition ; and (2) Specialisation.

I fully realise that a subject of such importance deserves to be presented by one more expert than myself, but I hope you will overlook the shortcomings of my presentation, and that you will make up for them in your discussion.

DISCUSSION

Mr. H. M. Wilson (Cupar, Fife), in opening the discussion, said: In expressing appreciation of Mr. Smythe's paper I would say that the long distance he has come will not prove unavailing. As many of you know, however, he is quite accustomed to long journeys, so eminent is he in the profession with his years of, and experience in, general practice. It may not be known to many of you that Mr. Smythe has the additional attribute of being a writer of novelettes, hence the combination resulting in to-day's excellent contribution by him.

Some time ago, when giving a paper with similar title to another Division of what is now the B.V.A., I prefaced with the query as to whether or not I was a suitable person to deliver the paper as my wife, not infrequently, in rather forcible language, referred to me as a bad manager. Since then I seem to have heard the expression less frequently because, presumably, of the lessons then learned. Perhaps after to-day I can look forward with hope and expectation to the ever less frequent use of that damning description.

General veterinary practice, it has been stated, is a vocation rather than simply a means of making a livelihood with ample leisure. This is perfectly true, for one must indeed have a strong love for the work in order to appreciate all aspects of it and have some understanding of the various types of patient and numerous problems which arise, even through sales and purchases of livestock, and the multitudinous ramifications of the whole picture.

Further, there can be no doubt that practices vary tremendously from district to district. In Scotland these are, I think, broadly divisible into the following groups:—

1. City practices, mainly now concerned with small animals and having a staff ratio with a bias to lay staff.

2. Highland and Island Scheme subsidised practices, some with long journeys, almost all arduous, and possibly the choice of the physically fit younger men.

3. The almost entirely dairy practices which appear, in most cases at least, readily managed in every detail, largely attributable to the fact that most dairies are easy of access and, in a true dairying district, lie thickly together. Moreover, stock thereon are mainly tied up, quiet and easy to handle. Loss of time, so valuable, is at an absolute minimum.

4. Practices on the East, where there tends to be a real admixture, with cattle feeding the principal type of stock farming. These cattle, being mainly loose, entail a frightful loss of time in handling them, which applies also to the suckling rearing herds. In this type of practice one meets, too, dairy cattle, agricultural work horses (fast declining in number), a few hunters, adolescents' and children's mounts, seasonal feeding flocks of sheep, some pedigree flocks and herds, a tendency to an increase in porcine practice, with small-animal practice forming about one-eighth of the total. There is also "Ministry work" which has, I feel, almost reached its zenith as practically all dairies are attested. Only the stragglers of the rearers are to test and, so far as the feeders are concerned, since they are purchased as stores (winter and grazing cattle), it follows naturally that they will come to the buyers already tested.

When, in this type of practice, several veterinary surgeons are occupied, each can develop his particular as well as his general interest and contribute his line of thought to the mutual pool of knowledge. To ensure progress, contact with specialists is most important.

It is indeed unfortunate that a practical admiration of animals, whether we be breeder, owner, or practising veterinary surgeon, requires capital to an ever-increasing degree. The burden of finance, particularly in the case of the last-mentioned, some may consider a feature favouring nationalisation, which, however, I decry as individuality of thought and action may well be fraught with irksome omnipotency.

I hold in high regard the single-handed practising veterinary surgeon, doubtless a hard worker, sorely tied and harassed. In order that practising veterinary surgeons may enjoy something of life's pleasures, current veterinary practices demand a minimum of two. Immediately there is an increase in practice personnel some pointed organisation is necessary. Bearing in mind that we owe the public a 24 hours a day, 365 days a year service, yet we should arrange half days, evenings off, week-ends off, annual holidays, and still remain solvent.

Net incomes do not by any means coincide, the variations depending on the character of each practice, as indicated previously: turnover, members of staff, overheads of one kind and another. In other words, some easily run practices will show a greater net income than others with perhaps not much more turnover, if any, but having from circumstances to employ more staff and likewise have much more capital involved.

Expenses, including those which are not productive but which are nevertheless vital to the smooth running of a practice, now tend to rise at a most alarming rate. Drugs, including sera, vaccines and antibiotics, at the end of a year now reach what would in former years have been regarded as fantastic figures. One month's account with one firm alone may well exceed the amount represented

by a whole year's drug purchases from all firms supplying in days gone by.

As always, diagnosis remains a first essential but it is imperative, whenever possible, to choose therapeutic agents as specifically as we can, both to reduce costs to the client as much as possible without endangering efficiency, and simultaneously to ease a major expense in practice.

The more or less consistent fall in percentage net profits during the last several years is becoming a top level problem as it renders difficult the ploughing in of capital, so vitally necessary from every aspect of practice and not least the furtherance of efficiency.

I heartily agree with Mr. Smythe in his cry for refresher courses: these can be thoroughly enjoyable and illuminating. I feel, personally, that demonstrations and discussions are much more penetrating and assimilable than mere reading. There is, too, scope for consultants.

Mr. Smythe has made some remarks which may have an effect on the young people occupying the "back benches" this afternoon. I, too, with the greatest of goodwill and best intentions, would like to offer a little advice. It is that you should at all times endeavour not only to be tidy in dress and manner, but keep the practice premises, vehicles, equipment, etc., tidy and presentable, as otherwise the clientele will develop a loss of confidence in you and in the practice wherever you may be, with lowered prestige of the profession as a whole.

Mr. K. P. Anderson (Stirling), who was the second opener of the discussion, said: I count it as a privilege and pleasure to be asked to contribute to this most excellent paper and would like to add, to those of Mr. Wilson, my thanks to Mr. Smythe. When I heard who was to give us this paper, I knew we could look forward confidently to an address which would be not only interesting and informative, but also original and probably controversial. It is quite evident that in this we have not been disappointed. Mr. Smythe has given us much food for thought and I hope we shall not only think about it, but shall act upon it.

It is a well-worn saying that the practitioner is the backbone of the profession, but, with all due deference to Professor Mitchell, I would submit that this backbone is in danger of succumbing to the effects of osteoarthritic changes. At the moment we are on the crest of a wave but, as I see it, the trough is not far distant. We are attempting to be jacks-of-all-trades, and will finish up by being masters of none. As Mr. Smythe has said, and in this I fully agree with him, the time has now arrived when some form of specialisation in practice is essential, and his idea of the formation of a post-graduate teaching establishment deserves very great attention. But I disagree with the idea that consultants should be general practitioners still engaged in general practice, as this would tend to differentiate them unfairly from their colleagues in the eyes of the public. If we are to have a Consultant Service, and I think it is very necessary, it must be readily available to the practitioners and I think would best be met by the formation of Veterinary Hospitals on something like a County basis, staffed by a specialist surgeon, physician, pathologist and nutrition expert. Aid in diagnosis has been given us in the past very successfully by the colleges, research institutions and veterinary investigation services but we require more than this for help in carrying out some of the more specialised techniques common in veterinary practice today.

I was particularly interested in Mr. Smythe's financial gymnastics but, while I am a notoriously bad financier, I do not think his figures are quite applicable to Scotland where the margin of profit in modern practice is, I believe, even lower than that which he quoted.

I was somewhat disappointed to see that Mr. Smythe had avoided giving us his views on the actual organisation of an individual practice, but perhaps during the discussion he may be induced to do this. He must have, I am sure, much valuable advice which he could give us to make our practices more efficient units. I would like to ask him particularly what method of case recording he adopts, for I am quite convinced that the efficiency of a practice depends more than we realise on adequate case recording. There must be a very great deal of useful knowledge lost to the profession through lack of it. In the present scientific age there is, I think, a great tendency for us to become over-scientific and to lose that clinical sense which was possessed in so marked a degree by our predecessors, and in my view careful case recording is the best method of counteracting that tendency.

A further question I would like to ask Mr. Smythe is, what does he consider the ideal size of practice? While single-handed practice is probably the most economic it is so trying that life in it can offer little else than work. Multiple practices, I think, are uneconomic, and tend to destroy the personal relationship between client and practitioner which is so much a part of practice. That leaves the two-man practice which I consider to be the ideal size.

In conclusion, may I again thank Mr. Smythe for his valuable paper, and express the hope that there will be a full discussion.

General Discussion

Mr. Hall, having thanked Mr. Smythe, expressed agreement that some form of specialisation was essential. He submitted, however, that even to-day, specialisation did exist in many practices employing more than one qualified man. Usually one member had a bias towards medicine and the other towards surgery.

An aspect of increased specialisation which gave him some concern was the difficulty that would be encountered in financing it.

Veterinary fees had not gone up to cover increased costs because the public simply would not pay three times as much as before the war.

He did not agree with Mr. Anderson that we were tending to lose our clinical sense or that we should hand over difficult cases or cases requiring, say, surgical procedures to consultants or specialists. He would rather deal with these cases himself than become like so many medical general practitioners who acted merely as sorters of cases for consultants and specialists.

He suggested that one way of getting over the increased costs of practice as far as drugs were concerned, might be to make increased use of prescriptions and less of dispensing. This would cut down drug bills, while apparently clients were prepared to pay for prescriptions although they would not pay for drugs.

Dr. Alex. Robertson, having added his congratulations to those of other speakers, said that he wished to point out the difficulties involved in financing specialist and consultant services in the absence of some drastic reorganisation such as nationalisation.

With regard to the question of post-graduate schools, he would most emphatically disagree with Mr. Smythe's suggestion that these should be divorced from existing schools. He felt the schools could undertake this and should undertake it—it would be mainly a matter of extra staff. He suggested that if people were not fit to teach graduates they were not fit to teach undergraduates and, therefore, would urge that the training of consultants be linked with the existing teaching organisations.

Dr. Henry Dryerre agreed with Dr. Robertson that post-graduate schools should be attached to present teaching schools. He pointed out that many of the difficulties encountered in running post-graduate courses could be got over by running these courses during vacations as was done in the medical school in Edinburgh.

With regard to the pre-examination of students he agreed with Mr. Smythe that commonsense methods should be applied. He had the honour of examining in Physiology for the Royal College of Veterinary Surgeons and besides assessing the students on their knowledge of physiology he attempted to assess their common sense by asking such questions as: why it is necessary to feed an animal? why is it necessary for an animal to keep on breathing? It was surprising how often such questions "stumped" students completely.

He had never been in practice but could well appreciate the serious position arising from the exorbitant cost of modern drugs. The remedy, in his opinion, lay in a less extensive use of such drugs, and a return to the older medicines in the British Pharmacopeia. In this connection he thought that the practitioner could well utilise embellishments in the prescribing or dispensing of such medicaments.

Mr. J. T. Stamp wished to speak on specialisation as, in his opinion, there was some confusion on the subject.

It was clear that diseases of farm animals could be divided into two groups: one to which we knew the answer and the other to which we did not know the answer.

Dealing with the first group was merely a matter of accurate diagnosis before the application of the appropriate prevention or treatment. The answer to the second group depended on further research and, therefore, on increased financial aid to, and staffing of, research centres, for it was in this group of diseases that the practitioners usually called for specialist advice and, for obvious reasons, very little help could be given by the best of specialists.

With regard to any specialist service for practitioners, the other difficulty he foresaw was in getting specialists who were capable of advising good practitioners. It would be necessary for teaching schools to increase their practices, teaching material and staffs if

they were to undertake post-graduate teaching and the production of specialists.

He deprecated the tendency to belittle the beneficial effects of modern remedies, such as sulphamezathine. They were infinitely better than the older methods.

Professor W. M. Mitchell felt that too much had been said about specialists and too little about practitioners. He deplored the modern tendency for clients to be the choosers of specialists. It should be for the practitioner to decide whether a specialist was necessary and which specialist was to be consulted. The practitioner must keep the goodwill of his clients by being prepared to make use of consultants. He regarded the practitioner as a specialist in the clinical diagnosis of diseases and considered that the practitioner had a vital part to play in the basic work of the profession.

He wished to point out that practitioners were not the only class of the profession who were beginning to feel the economic pinch and the squeeze of rising costs. This, indeed, was common to the whole community. There was a vital need for thrift and for attempts to diminish overhead costs.

Regarding the preselection of students, six years ago his opinions coincided with those of Mr. Smythe. He took two of his staff to help him in trying to select students. Had we got anything better than before the start of the interview system? He thought that the standard of student was probably slightly better. On the other hand, the more rugged quiet type of fellow was often better than the more polished type who made a good showing in an interview. Random selection was possibly almost as good.

He hoped that in our desire for increased specialisation we should not forget the necessity for the art as well as the science in veterinary practice. In the main, he was not so despondent as Mr. Smythe with regard to the future.

With regard to post-graduate education, he recalled the experience of Professor Greig and his own in running refresher courses after the First World War. They found it difficult to continue such courses because of shortage of staff. Apart from what practitioners gained by attending post-graduate courses, teaching staff found the exchange of ideas extraordinarily stimulating and the knowledge of field problems gained in this way indirectly benefited the future training of undergraduate students.

Dr. Russell Greig: It had been a very great pleasure for him to hear Mr. Smythe. There were so many practitioners present, however, that he would prefer to leave the discussion to them.

Dr. Alex. Robertson also mentioned the previous experience of running post-graduate refresher courses in the Royal (Dick) Veterinary College. These were successful up to a point but were disappointing because of the poor attendance of practitioners. He realised that this was due to the difficulties that practitioners experienced in getting away, and the financial difficulties of providing substitutes in their absence from their practices.

Dr. A. Foggie thought that some confusion had arisen during the course of the discussion on the question of post-graduate teaching. Mr. Smythe envisaged post-graduate courses on a much wider scale than simply refresher courses.

Dr. Alex. Robertson reiterated his previous question as to how this was to be financed.

Dr. Foggie thought that finance would be forthcoming if there was a real need for specialists and drew an analogy with human medicine where ample financial provision was made for post-graduate specialisation.

Mr. Hall suggested that Dr. Foggie's analogy did not apply. In human medicine people had been willing to exist on a pittance during the years of post-graduate specialisation in the certainty that they would be rewarded with large consultation fees later. This did not apply to veterinary medicine.

Mr. E. A. McPherson: It was futile to try to stave off the day of specialisation. Some form of it was essential; the question was what form was it to take? He suggested that it might be specialisation in the diseases of particular species. The number of specialists need not be large as they could cover either fairly wide areas of country or smaller areas of dense animal population. Indeed, it would be necessary that they should do so in order to obtain enough material.

Regarding the choosing of undergraduates, he suggested that after qualifying they were judged not so much on their knowledge as on such things as their appearance, general cleanliness (which was also important from the point of view of prevention of spread of infectious diseases), and their manner. Common sense was absolutely essential.

He wished to point out the dangers of belittling the modern aids to treatment, *e.g.*, sulphamezathine.

The profession, he suggested, was too loath to make use of the services of lay staff. We must learn to appreciate the necessity for the delegation of certain forms of work.

Mr. Watt thought that there was very little to attract the young graduate to concentrate on specialisation. The financial return in research work compared with practice was small.

Mr. Stamp: With regard to specialists, they were confusing the issue. There was already a great deal of specialist research work and there were the diagnostic Veterinary Investigation Officer services. What else did Mr. Smythe want? Everything was in existence to allow for post-graduate specialisation to be undertaken. All that was necessary was an increase in size and scope of the existing machinery and, as Mr. Watt had pointed out, increased financial rewards to encourage post-graduate specialisation. It was unnecessary to create any new machinery.

What diseases could Mr. Smythe mention (for which he hoped to obtain benefit by his specialists) that could not be dealt with adequately by an expansion of existing services?

Mr. Anderson suggested that Mr. Stamp had "got hold of the wrong end of the stick." What practitioners were requiring was not so much increased help in diagnosis, which help they already got from the V.I.O. services, but help in carrying out complicated techniques, *e.g.*, surgical techniques which, by their nature, were beyond the scope of the average practitioner.

Mr. Stamp: If it was small-animal surgical specialists who were necessary, why not say so? Were these not already available at the present teaching schools?

Mr. McPherson: These were only available locally. What was needed was a specialist service for the country as a whole, embracing all forms of specialisation.

Mr. J. Milne wished to pay tribute to the work of the V.I.O. services and said that these must be greatly extended.

Mr. Hall doubted the need for surgical specialists. Most practitioners preferred to carry out surgical techniques for themselves.

Dr. A. D. McEwen could not help noting a difference in tone in that day's discussion compared with what would have pertained 20 years ago. It was representative of the change in outlook among practitioners that they were now openly asking for increased help from outside. He thought that perhaps the pendulum had swung too far. He suggested that provided practitioners had a really sound knowledge of the application of animal husbandry and that the specialist services already in existence were extended, the case would be met. He wished to ask Mr. Smythe how far he thought that specialisation should be carried. He also wished Mr. Smythe to define more exactly what he meant by specialists.

The Reply

Mr. R. H. Smythe, in reply, said that he was very grateful to the openers of the discussion and to all who had taken part. As probably they had gathered, he came there with the germ of an idea rather than to formulate any complete scheme and from their response he felt that the germ had gained a fairly good hold.

It was quite true that Ministry work varied as regards its percentage value in different practices and in various localities. In the South, until the time eventually arrived that the majority of herds were attested, both Ministry and private testing must occupy a considerable amount of time and when one took the long view, it was perhaps regrettable that, in so many cases, the principal devoted most of his energies to this work, which at the moment was extremely profitable, leaving the bulk of the remaining work, which ultimately must again become the backbone of the practice, to the assistants.

Mr. Hall had suggested that specialisation already existed in practices which carried several members. In a sense this was correct, in that some individuals might be less dangerous than others in the performance of special types of practice. (Laughter.) He had been engaged for many years in running practices, carrying a staff of six qualified persons, but it had been seldom that any one of these would have claimed for himself or herself, a specialised knowledge of any particular branch. One of these was almost wholly engaged on small-animal surgery and might with justice be considered a specialist. The remainder were for ever rushing about the country at high speed in an endeavour to beat the clock and had neither time nor inclination for specialisation. It was always remarkable how seldom the staff were ever in one place at one time and consultation would have been almost an impossibility. This lent force to his remark that the principal of a large practice needed to be business manager and to devote as much time to administration as to clinical diagnosis. The alternative was to employ a lay manager, who would be capable of organising the work of the staff, with sufficient tact to retain all the members on the pay roll. Such a man would require genius; he would also retain possession of the keys of the storeroom and would issue antibiotics, sera, expensive drugs and replacements only against the signature of the assistant who required them. It was a good plan to issue a specified equipment to each so that a check could be kept as regards members of the staff, or even of the management, who were habitually unfortunate or forgetful.

The almost universal system of filling cars to the brim with expensive drugs was strongly to be condemned.

Although he agreed that, in many cases, modern drugs were superior to the older remedies, he still maintained a healthy respect for the old B.P. and he preferred prescriptions to packed drugs whenever circumstances permitted. Unfortunately, in his experience, few assistants could write a simple prescription containing drugs outside the sulpha group. It was advisable to try, so far as was compatible with our own pockets, to keep the farmers' bills down to a minimum and he suggested that it was more professional and better politics to charge a fee for attendance and advice and accept a moderate profit on drugs, rather than act as a druggist's agent with small emphasis on the value of one's professional service.

He was extremely glad that the general feeling there that day was that extensive post-graduate teaching might be carried out at a teaching centre, such as Edinburgh, by enlargement of the college and an increase in the staff, and he was particularly pleased that the present staff should show eagerness to participate in such a scheme. Although, generally, he was not in favour of the hospitalisation of small animals, apart from emergency cases, he appreciated the fact that hospitals might also act as centres at which a number of specialists might be congregated to the advantage of surrounding practitioners.

The keeping of case records was very desirable and a great amount of valuable clinical material was lost through failure to record. But, unfortunately, the running of a veterinary practice, nowadays, resolved itself into a perpetual race against time and the leisurely methods which would enable one to make case records seldom fitted in with modern economics. He encouraged some of his larger commercial farmers to keep records of every illness and to provide him with copies, to which he appended clinical notes, but he was perhaps more fortunate than some in his choice of clients.

Finally, he came to the question, "What is a specialist?" He was willing to accept anyone as a specialist if he was convinced that his or her knowledge of a particular condition was considerably greater than his own. It followed that he had a considerable number to choose from. (Laughter.) To be of any service in a scheme such as he had outlined, the consultant must be available to go into the field and meet patient and owner as well as the practitioner in attendance. The armchair specialist might have his uses but he did not fit in with the scheme suggested. It seemed that he envisaged a wider service than he conveyed to some of his audience, but he would be content with a small beginning if assured of their help and co-operation in its initiation whenever circumstances favoured its adoption. (Applause.)

ANIMAL HEALTH IN GREECE AND YUGOSLAVIA

The Athens Correspondent of *The Times* reports that a joint programme to efface livestock disease is being carried out by veterinary officials of Greece and Yugoslavia, after a tentative agreement had been reached at a conference in Salonika.

"The veterinarians agreed to establish a buffer zone 19 miles wide on each side of the Greek-Yugoslav border, in which strict disease control would be enforced to prevent movement of diseased animals and animal products in international trade. Within the zone, the veterinary services of both nations will assist each other.

"Another major point of agreement was the designation of ports of entry for livestock, where the respective veterinary services would assume sanitary control A common procedure for reporting disease conditions was adopted by both countries, and reports will be exchanged monthly. All contagious diseases in the border zones would be reported to the neighbouring zone immediately. It was agreed that in case of epidemics or other emergencies in the buffer zones, the veterinary facilities of each country would be available to combat the outbreak. The Governments of Greece and Yugoslavia have been asked to ratify this agreement."

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BLEDISLOE TROPHY

Caernarvonshire has won, for 1951, the Inter-County Dairy Herds Trophy, given by Lord Bledisloe to encourage the elimination of tuberculosis among dairy cattle. Breconshire came second, Montgomeryshire third. The trophy will be presented at the Royal Show.

Points in this contest are now awarded on the basis of the number of attested herds, expressed as a percentage of all herds in the county, and the percentage increase in the number of attested herds. One point is given for each percentage under each heading.

CLINICAL COMMUNICATION

DYSTOCIA DUE TO *SCHISTOSOMUS REFLEXUS*

P. R. GREENOUGH, M.R.C.V.S.,
Castle Cary, Somerset

Recently it has been my experience—unique so far as I am concerned—to deliver in one week three cows pregnant with *Schistosomus reflexus*. The cows were of the Guernsey breed and had conceived to different bulls by artificial insemination. The cases are considered to be sufficiently instructive to warrant their publication.

Case 1

Subject.—A 14-year-old cow with a history of having had three sets of twins.

Vaginal examination revealed a roomy pelvis and a large schistosome with one anchylosed limb, but the shape of the monster could not be made out because of its impaction at the pelvic brim and the violent straining of the dam. Epidural anaesthesia was therefore employed, and this facilitated embryotomy. Forced traction was not feasible, so both hind limbs, one anchylosed, were removed and this gave space for further exploration of the foetus. The extreme deformity of the calf revealed why it was impossible to employ an embryotomy wire at the usual angles. The stump of one femur was then removed manually but traction still failed to deliver the calf, therefore it was necessary to remove a forelimb. Owing to the position of the shoulder, which was later accounted for by the deformity of the scapula, it was impossible completely to remove that bone. When traction was again applied the remainder of the calf came away at once.

The *after-treatment* of the cow consisted in the injection of penicillin—600,000 units into the uterus and 1,000,000 units subcutaneously—and 10 c.c. of pituitrin intramuscularly. On each of the first three days an injection of 20 c.c. of Anthisan was made, and the vulva treated with antiseptic fomentations.

Although there was much bruising of the vagina, within a week of her ordeal the cow was yielding 4 gallons of milk daily.

The monster is shown in the photograph.

Case 2

Subject.—A heifer, 14 days before term, recumbent with dystocia due to *Schistosomus reflexus.*

The monster was easily identified owing to the presence of foetal viscera, and because of its small size it was decided to attempt delivery by traction on the head and legs. This was successful, but securing the head and limbs with the heifer continuously recumbent, was a difficult task.

The *after-treatment* was with Anthisan and an uneventful recovery followed.

CASE 3

Subject.—A small heifer in labour with a schistosome.

The monster was completely "inside out," the head and legs being entirely enveloped by a sac of skin, the viscera lying behind this pouch.

The heifer would remain standing for only short periods so that most of the manipulation had to be done with her in the recumbent position.

Embryotomy.—The skin of the foetus was incised and worked back over the head and part of the legs, but it still interfered with section of the foetus. One foreleg, which was anchylosed and small, was removed by traction and two other limbs were almost completely removed following embryotomy. Considerable traction was next applied to the remainder of the foetus with no result, except that the bladder of the cow prolapsed. Fortunately, this viscus was replaced fairly easily. At this stage the case seemed hopeless but after removing the remaining limb, and applying all available traction to its head, the foetus was finally delivered.

During the several hours occupied over this case the heifer became exhausted but suffered no vaginal laceration.

After-treatment was the same as in Case 1, and recovery was rapid.

DISCUSSION

From the experiences gained with these cases the following suggestions are made for dealing with this troublesome type of dystocia.

1. As a preliminary move, moderate forced traction should be applied to all four limbs. If this fails it is unlikely that bisection of the body will be practicable unless the foetus presents in the opposite direction, namely, ventro-transversely.

2. The use of classical methods of embryotomy is largely precluded owing to the deformed body obstructing the play of the wires. It is probably best, after incising the skin at the base of the limb, to attempt disarticulation of the limbs by torsion and traction.

3. Both hind limbs should be amputated first and then traction applied. Simultaneous traction on fore and hind ends of the body is contra-indicated: this would be the case if the forelimbs were removed and traction applied to head and hind limbs.

4. It is probably unwise to decapitate the foetus.

The prolonged manipulative interference which is necessary to deliver cases of *Schistosomus reflexus* is likely to be followed by extensive oedema of the vagina and shock, while the exhaustion of the uterine muscle which occurs favours the collection of exudate and the development of metroperitonitis. These sequelae *can* be prevented by the use of drugs, and the expense of such therapeutic after-treatment is well justified by the favourable outcome, which is shown by quick return to health and the early development of a good milk yield.

Anthisan is undoubtedly the drug of choice wherever bruising has been considerable, for it reduces to a minimum vaginal oedema and shock, and promotes milk secretion. Pituitrin favours contraction of the uterus and this, together with uterine injections of intramammary penicillin, is conducive to early uterine involution and the prevention of metritis.

ABSTRACTS

Modern Theories in the Pathogenesis of Milk Fever and Bovine Ketosis*

This is a review article that serves to emphasise the uncertainty still prevailing in regard to the pathogenesis of milk fever and bovine ketosis. The article does emphasise the wildly speculative character of at least some of the theories advanced in recent years in regard to these diseases.

The article opens with a reference to the importance of ruminal function which for its efficiency is dependent on the activity and composition of the ruminal flora and fauna. The ruminant does not absorb its carbohydrates in the form of monosaccharides but converts the carbohydrates into the lower organic acids in the rumen, and it is these that are absorbed and utilised.

The work of one of the authors of this article—namely, Clark, in 1947—suggested that the basic cause of milk fever is an alkalosis. This may be caused by the removal of acid ions in the milk or the failure of the formation of organic acids in the rumen. The high producing cow is said to lose large amounts of acid radicles from her blood which will predispose towards alkalosis. The proof of this contention is said to lie in a demonstration of an increase in the alkali reserve of parturient cows.

High producing cows are normally fed rations rich in protein which tends to the production of alkalinity of the ruminal contents by inhibition of the normal acid fermentation of carbohydrates and in extreme cases by the production of ammonia. The flow of organic acids for the production of blood glucose and milk sugar is, therefore, reduced while at the same time there is a tendency to alkalosis. Alkalosis reflexly inhibits ruminal motility. If the drain of acid radicles in the milk causes alkalosis, ruminal paresis will develop resulting in inappetence and a cessation of fermentation. The vicious cycle can therefore be initiated from excessive acid loss or from primary digestive disturbance.

Twenty-five lb. of milk contain approximately four times the total amount of calcium in the blood of a 1,000 lb. cow. This enormous loss of calcium has to be replaced from the calcium stores of the body and from the food. The successful mobilisation of calcium is retarded by alkalosis.

The benefit of calcium gluconate therapy is said to be threefold. (1) Calcium is added temporarily to the circulating blood; (2) acidification; and (3) combating dehydration. Acidification produces hypercalcaemia in normal parturient cows; cases of milk fever complicated by acetonaemia show an even greater measure of hypercalcaemia; relapses after calcium treatment do not occur if steps are taken to produce acidification.

There are various methods of producing acidification. When given by mouth, chlor-ethamine, a brand of ethylene-diamine-dihydrochloride, releases hydrochloric acid; acetic acid has a transient effect but ammonium chloride is most effective. It is therefore recommended that the standard calcium gluconate treatment should be followed by 40 to 60 grammes of ammonium chloride given by mouth every eight hours.

Ketosis may be held to result from any of five different causes: (1) insufficient available carbohydrate in the food; (2) disturbance of carbohydrate digestion and absorption due to cessation of ruminal function; (3) disturbance of carbohydrate metabolism as in diabetes mellitus (though this

* **Modern Theories in the Pathogenesis of Milk Fever and Bovine Ketosis.** WEISS, K. E., & CLARK, R. (1951.) *J. S. Afr. vet. med. Ass.* **22.** 135-141.

disease has never been proved to occur in ruminants); (4) a physiological attempt to correct alkalosis; (5) the possible formation of ketones or ketogenic substances in the rumen.

The authors support the classification of ketosis adopted by Hoflund and Hedstrom; this divides ketosis into primary acetonaemia and secondary acetonaemia. Primary acetonaemia may result from (*a*) underfeeding when the diet is highly fibrous and poor in other nutrients, or from (*b*) overfeeding where there is an excess of protein over carbohydrate. Secondary acetonaemia results when a cow ceases to feed for any reason.

The treatment of ketosis is discussed briefly, three main points being emphasised: (1) as there is no hypocalcaemia in ketosis calcium-borogluconate is not indicated; (2) the replacement of blood sugar by parenteral injections gives an immediate but only temporary benefit; (3) the rumen function should be restored by acidification and the administration of sugars by mouth. Mention is made of the oral use of glycerin in the treatment of ketosis but no opinion is expressed as to the value of this treatment.

Stress is laid on the value of dietetic measures in the prevention of milk fever and ketosis, it being stated that the diet "should be well balanced, but not too high in protein and contain adequate starch and sugar." The feeding of molasses during the last month of pregnancy is said to be useful.

Ovine ketosis is said to be apparently on all fours with bovine ketosis; the treatment and prevention are therefore on the same lines.

Finally, there is a brief discussion on the possible rôle of the adrenal cortex in acetonaemia; this concludes with the following impressive sentence—"In short, it is our opinion that although cortisone or A.C.T.H. may be proved to alleviate some of the symptoms of ketosis, for example hypoglycaemia, this does not prove that the adrenal cortex is primarily involved in the pathogenesis of this condition."

G. F. B.

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Nutritional Abortion and Stillbirths in Pigs*

On various occasions from about 1930 onwards, farmers have reported to the Veterinary Research Institute of Melbourne University that their sows had either aborted or had farrowed litters consisting almost entirely of dead piglets. Details relating to 10 such reports and their subsequent investigation are given. In all instances there was freedom from brucellosis and no other pathogenic organism was incriminated. Affected herds were scattered over a considerable area of the State, and there was no evidence of any common regional or topographical factor. While there was some evidence of seasonal incidence, this was to be expected from the fact that pig breeding in Victoria is itself largely seasonal, the majority of sows farrowing during the winter and early spring. In many cases, abortion or stillbirth occurred in sows that had been purchased only comparatively recently. There was no common dietary factor, except that in all instances the herds in question were fed mainly on garbage and cereals, and that there were obvious deficiencies in minerals (especially calcium), protein and fresh green food.

In all instances the diet was improved, usually through the provision of from 5 to 10 per cent. of meat meal or similar animal protein supplement and of a suitable mineral mixture, with grazing or the provision of fresh green food where available. The response appeared to be excellent in that no further cases were reported from any of the farms in question.

The paper contains a useful review of experimental and other observations related to abortion and stillbirths of nutritional origin in pigs.

A. N. W.

* **Nutritional Abortion and Stillbirths in Victorian Pigs.** Pullar, E. M. (1950.) *Aust. vet. J.* **26.** 4-8.

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Diurnal Variations in Calcium, Magnesium and Citric Acid Levels of the Blood Serum*

Statistical examination of the results of analysis of jugular blood taken from Jersey cows in various stages of lactation showed the following results. Serum calcium showed significant variation of calcium levels between the individual cows but the daily or diurnal variation was not significant. Serum magnesium levels showed no significant variation between cows or days, but did show a small significant diurnal variation. The low level was at the 9 a.m. bleeding. Serum citric acid levels showed no significant diurnal variation but the variation between days and cows was significant.

F. R. B.

* **Diurnal Variations in Calcium, Magnesium and Citric Acid Levels of the Blood Serum.** Blosser, T. H., *et al.* (1951.) *J. Dairy Sci.* **34.** 75-79.

REVIEW

[Tubercle Bacillus and Laboratory Methods in Tuberculosis. By M. A. Soltys, in collaboration with C. A. St. Hill and I. Ansell. (1952.) 212 pp., 12 figs. E. & S. Livingstone, Ltd., Edinburgh and London. Price 20s. net.]

This is a worthy book and like worthy people it is in danger of the sin of dullness. The authors hope that the information given may be of some value to those who are interested in tuberculosis, particularly as no comprehensive reference book on the subject has been published for many years. Many are interested in tuberculosis—the patient, the medical and the veterinary practitioner, the stockowner and the social worker. This work appears to cater for none of these alone and at times one reads something of value to one kind of worker, and then there are passages which clearly are for those who have no experience and have had no training in specialised aspects of the subject.

Eight chapters are devoted to the tubercle bacillus, and brief accounts are given of the morphology, the growth and cultural characteristics, the metabolism, the antigenic structure and the pathogenicity of this micro-organism. Some portions exhibit a curious *naïveté* and the chemical fractions of the tubercle bacillus are given with an exactitude which is terrifying. A little later we read of the lowering of the virulence of tubercle bacilli and of the change from a smooth culture to an intermediate variant, this change having taken place because of the resistance of the white race from centuries ago when the disease occurred in a more acute form. Pathogenicity and virulence are terms which should not confuse the reader and it is not strictly true to regard the Yersin type of disease as synonymous with a "septicaemic form of tuberculosis"; the original use of the

term could have been told. Mention of the "adaptive" and "constitute" enzymes with no amplification and no explanation does not aid the biochemist, the microbiologist or the physician.

The second part on the laboratory methods in tuberculosis is a greater mixture of erudition and common practice. The accounts of the techniques used for collecting specimens from human patients, and the ways in which they are homogenised and the bacteria concentrated, are straightforward. The use of antiformin is not encouraged, and a first-hand appreciation of the different methods available for demonstrating tubercle bacilli by microscopic and cultural methods would have been most welcome. The diffidence of the authors in this aspect is relieved by their opinion of the claims made concerning fluorescence microscopy in tuberculosis. The necessity for marking animals when making experiments is stressed but no mention is made of the type of anaesthetic used for the intranasal administration of material to mice. The book is therefore consistent in being inconsistent; experimental tuberculosis must not be confused in laboratory animals with natural tuberculosis, but one should have been warned of the diseases which are not caused by the tubercle bacillus but simulate the disease. Few people use "antigen," "antigenic" and "immunity" correctly and these words are used loosely here; the "peculiar type of immunity" in tuberculosis is an unfortunate phrase needing some explanation. The oblique references made to some aspects of bacteriology and serology imply the background of the expert and then there are the simple instructions for the novitiate. The chapters on chemotherapy and tuberculin are full of brief references to current and recent work but lack a critical assessment which would enhance their value.

It is regrettable that the great amount of work expended has not yielded a better result and the authors deserve praise for their industry. Long lists of references appear at the end of each chapter and this alone is useful, for nowhere else is such bibliographical wealth so readily available. It is hoped that the authors will be enabled to polish what amounts to a precious stone lacking lustre.

IN PARLIAMENT

Allegations of Cruelty to Horses

GOVERNMENT REPLY

In the House of Commons on June 16th the Minister of Food was asked if his attention had been drawn to recent revelations that, in this country, a technique was being practised by using an electrical device to produce white meat from live horses; and if he would take action to bring to an end this trade.

Major LLOYD GEORGE replied that the responsibility for enforcing the Slaughter of Animals Acts rested wholly with local authorities and not with his department. The Food and Drugs Act prescribed the conditions under which horseflesh might be sold for human consumption. He relied on local authorities to enforce these provisions—which he thought were adequate. He proposed, however, to help them by requiring horse slaughterers to notify their local authority of their intention to slaughter.

At a later date Mr. CHAPMAN, initiating a short debate on the subject of cruelty to animals, made further reference to the slaughter of horses, stating that the facts revealed in an article in the *Manchester Guardian* were appalling, particularly the account of the stunning of these animals, the extraction of their blood, and the sale of the meat as veal to restaurants.

Sir HUGH LUCAS-TOOTH, Under-Secretary, Home Office, said that the export of horses from the United Kingdom nad been dealt with by an amending order in 1950. In 1951 only 736 horses had been exported, and 613 had been either thoroughbred racehorses or similar types; only five horses had not come within some clear definition. There was no longer any export of horses from this country for slaughter. As to what had been described as the "devilish device" of an electrical pump used to convert horse flesh into veal, the statutory provisions appeared to be adequate, but there was the practical difficulty of enforcing them. Under the Food and Drugs Act, 1938, all horses slaughtered in the way of business must be slaughtered in slaughterhouses or knackers' yards licensed by local authorities, and the Sale of Animals Act, 1933, required that animals, including horses, should be instantaneously slaughtered, or stunned until insensibility or death intervened.

Of the particular allegation concerning an electrical device, Sir Hugh Lucas-Tooth said that the fullest enquiries had failed to disclose any information on this offence at all. The Government had no information that anything of the kind was being done, and they had no reason to suppose that any such method of the slaughter of horses was being used in this country. The article in the *Manchester Guardian* had contained a statement made by an Irish dealer speaking of what was being done by another dealer. It was what the lawyers called hearsay evidence, and he understood that the *Manchester Guardian* had no other evidence on the matter. They did not known the name of the dealer who was said to have used this machine. In those circumstances, the Government must assume that if it had occurred it was an isolated case, but if anyone had any further evidence about it the Government were anxious to hear it.

On the more general question of cruelty to animals (raised by Mr. Chapman) there was no indication of any substantial increase in crime, or indeed of any increase in the degree of cruelty involved. Statistics showed that in the 1920's there was an average of 6,000 prosecutions a year. In the following decade the average had dropped to 3,000. In 1945 the number was only 900. By 1948 the figure had dropped to 846, and in 1951 it had risen again to 1,021. That was not a big rise, and the recent figures had been running at an average of just below 1,000.

One possible reason for the increase in complaints to the R.S.P.C.A. was the livelier interest of the public, which was a good thing. Some 11,000 oral warnings had been given by the Society but he had no knowledge of the sort of offences for which they had been given. It might well be that a large number were issued because of ignorance and carelessness rather than criminal intent.

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AN URGENT ENQUIRY

On Tuesday last the Prime Minister announced that the Government have decided to hold immediate enquiry as to whether the report of the Rosebery Committee, on the trade in horses for slaughter and export, published in March, 1950, needs to be brought up to date. Effect had been given to many of the recommendations of that Committee, but not the recommendation that all central Government functions in relation to horse slaughterhouses and knackers' yards be allocated to one Ministry, and this question is to be considered as one of urgency.

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Questions

SLAUGHTERING FACILITIES, KENT

Mr. DEEDES (June 16th) asked the Minister of Food what representations he has received on the subject of slaughter facilities in the county of Kent; and, in view of the dislocation of the service caused by foot-and-mouth standstill orders, what action he is proposing to take to deal with the situation.

Major LLOYD GEORGE: Representations have been made to me on this matter by the National Farmers' Union. To meet the situation we have temporarily reopened as many small slaughterhouses as possible, but whatever we do we cannot ensure that during outbreaks of foot-and-mouth disease the purchase and slaughter of stock shall proceed as smoothly as usual.

Mr. DEEDES: Is my right hon. and gallant Friend aware that, during recent weeks, conditions have really been akin to chaos in many areas of Kent and that it has been represented that the reactions of his Ministry to the many representations that have been made on the subject have not been as swift or helpful as they might have been? Will he see that there is an investigation into the conditions on the spot?

Major LLOYD GEORGE: While I very much appreciate the difficulties which farmers in this area are undergoing at present, I do not think that my hon. Friend is being quite fair in this respect. Obviously, it is impossible to have slaughterhouses and expert staff to meet all the contingencies which arise from time to time. Nine new slaughterhouses are being built at the moment, six of which are in the South and East of Britain. One is being built in Canterbury, and it will be opened in October. We have been able to open six temporary slaughterhouses, which are doing something to relieve the congestion.

Mr. DEEDES asked the Minister of Food how many pigs, at

the last convenient date, had been notified as awaiting slaughter in the county of Kent.

Major Lloyd George: The number of pigs at present said to be awaiting slaughter and held up by foot-and-mouth disease restrictions is about 2,700.

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Meat Inspection

Mr. F. Willey (June 16th) asked the Minister of Food what steps he is taking to implement the recommendations of the Report of the Inter-Departmental Committee on Meat Inspection.

Major Lloyd George: A revised memorandum of methods and criteria of meat inspection will be issued to local authorities in the near future. Draft regulations are being prepared and the representative bodies concerned will be consulted in due course.

NOTES AND NEWS

Diary of Events

July 2nd.—Meeting of the North Wales Division, B.V.A., at the School of Agriculture, Memorial Buildings, Bangor, 2 p.m.

July 7th.—Annual General Meeting of the Association of Veterinary Teachers and Research Workers (Northern Region), at the Veterinary Field Station, Leahurst, Neston, Wirral, 11 a.m.

July 9th.—Meeting of the Editorial Executive Committee, B.V.A., at 36, Gordon Square, London, W.C.1, 2.30 p.m.

July 10th.—Meeting of the South-East Midlands Division at Franklins Gardens Hotel, Northampton, 2.30 p.m.

Sept. 8th—13th.—Seventieth Annual General Meeting and Congress of the British Veterinary Association, at Harrogate.

Council and Committee Meetings of the B.V.A.

The next quarterly meetings will be held in London on July 21st, 22nd and 23rd, in the following order:—

July 21st.—Monday, 12 noon, Parliamentary and Public Relations Committee; 2.30 p.m., Organising Committee.

July 22nd.—Tuesday, 10 a.m., Veterinary State Medicine Committee; 12 noon, Home Appointments Committee; 2 p.m., General Purposes and Finance Committee.

July 23rd.—Wednesday, 11 a.m., Council Meeting.

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"Laboratory Aids to Clinical Diagnosis"

[Prepared by the Technical Development Committee of the Association]

Additional copies of this booklet, which was circulated to all members with our last issue of *The Veterinary Record*, are obtainable by members and students at the rate of 4s. 6d. each (post free). The price of this publication to non-members is 9s. 6d.

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Glasgow University Commemoration Day

Glasgow University completed their quincentenary celebrations on Commemoration Day, June 18th. During the day Honorary Degrees of Doctor of Divinity and Doctor of Laws were conferred on fifteen graduates, men eminent in religion, science, medicine and law.

The ceremony was presided over by Lord Boyd-Orr, Chancellor of the University. It was coloured by the many hued academic robes which stood out against the heavy architectural splendour of the Bute Hall and brightened, too, by several well-appreciated shafts of humour thrust out during the reading of the encomiums. Prominent among the graduates was Sir Thomas Dalling, late President of the Royal College of Veterinary Surgeons and now Adviser to F.A.O. of the United Nations, and well known to every member of the veterinary profession in this country. In presenting Sir Thomas for graduation, Professor Alstead, the Regius Professor in Materia Medica, alluded to the important work of the veterinary profession in relation to animal health, agriculture and the world food supply. He described Sir Thomas's journeyings over the world, and referred to his frequent "swooping out of the skies" in an aeroplane, but stressed that his mission was not to bring death and disease but to attempt to cure and alleviate it. He referred also to Sir Thomas's earlier association with the old Glasgow Veterinary College, to his unfailing help to the University and, indeed, to the whole country, in the new developments that have taken place in veterinary education.

Among those who also received honorary degrees were Charles Spurgeon Johnson, President of Fisk University, Thomas Godfrey Polson, Baron Rowallan, Carl Hamilton Browning, Emeritus Professor in Bacteriology, Sir Harold Spencer Jones, the Astronomer Royal, James Pickering Kendall, Professor of Chemistry in the University of Edinburgh, and Sir Cecil Pembrey Grey Wakeley, Bt., President of the Royal College of Surgeons of England.

Before the graduation ceremony a service in remembrance of benefactors of the University was held in the University Chapel. The roll of benefactors and the call to commemoration were read by the Principal and Vice-Chancellor, Sir Hector Hetherington. After the graduation ceremony the graduates attended a service at which the memorial gates in commemoration of the quincentenary and donated by the General Council were dedicated and formally opened by Lady Hetherington.

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PERSONAL

Births.—Buller.—On May 17th, 1952, at The Old Farmhouse, Ickleton, Cambs, to Catherine, wife of John Buller, a son.

Ogden.—On May 30th, 1952, to Jill, wife of Lawrence Ogden, M.R.C.V.S., D.V.S.M., of Upper Hill Barn, Aston Tirrold Downs, Berkshire, a second child—Christopher Lawrence (Kit).

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FOOT-AND-MOUTH DISEASE

Since our last issue foot-and-mouth disease has been confirmed among cattle at Plymtree, Cullompton, Devon, and the total number of outbreaks since November 14th reached 479 at midweek; this has necessitated the slaughter of 29,238 cattle, 21,983 sheep, 10,628 pigs, and 52 goats.

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Fined for Failure to Notify

At Cheadle Magistrates' Court on Friday of last week, Percy Brassington, of Blakelow Farm, Hilderstone, Staffordshire, was ordered to pay the maximum fine of £50, with £21 10s. costs, on being found guilty of failing to notify the existence of foot-and-mouth disease on his premises between May 2nd and May 11th. He pleaded not guilty.

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ARTIFICIAL INSEMINATION OF CATTLE IN ENGLAND AND WALES

Reconstituted Central Advisory Committee

The Ministry of Agriculture and Fisheries announces that the Central Advisory Committee on Artificial Insemination appointed by the Minister in 1944 to advise him on the control and development of artificial insemination of cattle in England and Wales, has been reconstituted.

The new Committee will be under the Chairmanship of the Rt. Hon. the Lord Carrington, M.C., Joint Parliamentary Secretary to the Ministry of Agriculture and Fisheries, and the other members are:—

Nominated by the Minister.—Sir John Barlow, Bt., J.P., M.P.; Dr. J. Hammond, C.B.E., M.A., F.R.S.; Professor Wm. C. Miller, M.R.C.V.S., F.R.S.E.

Nominated by the Milk Marketing Board.—Mr. T. Peacock, C.B.E., J.P.; Mr. W. R. Trehane, B.Sc.; Dr. Joseph Edwards, D.Sc.

Nominated by the National Farmers' Union.—Mr. J. W. Salter Chalker, J.P.; Mr. G. Gibbard, O.B.E., J.P.; Mr. F. Vincent.

Nominated by the Cattle Breed Societies collectively.—Lieut.-Colonel E. C. Bowes, M.R.C.V.S.; Mr. G. J. Curtis; Mr. G. McWilliam.

Nominated on behalf of Private Centres.—Mr. J. Edgar; Mr. P. Sutcliffe.

The following have been appointed Assessors to the Committee.—Mr. J. N. Ritchie, B.Sc., M.R.C.V.S., D.V.S.M.; Mr. H. E. Bannister and Mr. H. L. Shrimpton, M.C.

The Secretary of the Committee is Mr. R. Harding Wynne, Ministry of Agriculture and Fisheries, 14/21, Chester Terrace, Regent's Park, London, N.W.1.

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax:

Cambs.—Fordhouse, House Farm, Fordham, Ely (June 16th).

Carms.—Penfoel Farm, Chapel Isaac, Llandilo (June 17th).

Wilts.—Manor Farm, Monkton, Farleigh, Bradford-on-Avon (June 16th); Parsonage Farm, Warminster (June 17th).

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Yorks (*W.R.*).—Church Farm, Hartshead, Liversedge (June 16th).

FOOT-AND-MOUTH DISEASE:

Berks.—Westridge Manor Farm, Streatley (June 16th); Church Farm, Compton (June 19th).

Ches.—The Lodge, Hankelow, Crewe (June 16th); Oulton Lowe Farm, Oulton Lowe, Tarporley (June 20th).

Devonshire.—Woodbeer Court Farm, Plymtree, Cullompton (June 20th).

Dorsetshire.—East Holton Farm, Lytchett Minster, Poole (June 21st).

Dumfriesshire.—Bankfoot Farm, Dalswinton Road, Kirkmahoe, Dumfries; Kirkbank, Lockerbie, and Skipmyre, Lochmaben, Lockerbie, Dumfries (June 17th); Kerricks Farm, Dalswinton Road, Kirkmahoe, and Johnstone Bank, Ecclefechan, Dumfries (June 18th); Redhills, Torthorwald, Dumfries (June 20th); Backburn, Annan; Kilness, Newbridge, Holywood; Cleughbrae, Terregles, Dumfries (June 21st); West Bownill, Annan; Bengall, Lockerbie, Dumfries (June 22nd).

Kent.—Water Farm, Bethersden, Ashford (June 16th); Forstal Farm, Daniels Water, Great Chart; Old Surrenden Farm, Bethersden, Ashford (June 18th); New Street Farm, Great Chart (June 19th); Hornbrook Farm, Appledore, Ashford (June 21st).

Kirkcudbrightshire.—Oaklands Farm, Terregles, Dumfries (June 18th).

Sussex (*E.*).—New Place, Framfield; Sewage Farm, Hailsham (June 18th).

FOWL PEST:

Essex.—182, Eastwood Road, Rayleigh (June 17th).

Surrey.—Eugene House Field, Horsley Tower, East Horsley, Leatherhead (June 20th).

Sussex (*E.*).—Ovingdean Grange, Ovingdean, Brighton (June 17th).

SWINE FEVER:

Beds.—The Limes, 142, London Road, Biggleswade (June 17th); Bushmead Farm, Bushmead, Eaton Socon, St. Neots (June 20th).

Berks.—Wellington College Piggery, Crowthorne (June 17th).

Derbyshire.—Hollow Farm, Shuttlewood (June 16th).

Gloucs.—Woodlands Farm, Hewelsfield, St. Briavels (June 17th).

Lancs.—Peel View, Drinmacre Lane, Longton, Preston (June 20th).

Salop.—Moss Farm, Myddle (June 16th).

Suffolk.—Potash Farm, Walsham-le-Willows (June 16th).

Warwicks.—Hillfields Farm, Lighthorne (June 14th); Heath Farm, Meriden, Coventry (June 20th).

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ERADICATION OF BOVINE TUBERCULOSIS IN DENMARK

The following note has been received from Mr. Geoffrey West, M.R.C.V.S., who was present at the Copenhagen celebrations:—

Prince Knud, younger brother of the King of Denmark, attended a luncheon, held in Copenhagen on June 13th, to celebrate the successful completion of Denmark's 60-year struggle against bovine tuberculosis. Both at the luncheon and at a meeting in the Danish House of Commons congratulatory speeches were made by representatives of Norway, Holland, France and Germany. It was unfortunate that no official representative of the United Kingdom was there to express our admiration for this achievement, and apparently no message was received from our Ministry of Agriculture.

Thirty years ago 80 per cent. of Danish herds were tuberculous. To-day Denmark is the first country in the world to guarantee that all her exports of butter and cheese are made from milk of tubercle-free cattle.

The struggle against the disease has been carried on by two generations, since the time when Professor Bernhard Bang, of the Royal Veterinary College, Copenhagen, outlined his well-known plan. In 1893 the State granted a subsidy of £2,500 for tuberculin testing and in 1928 subsidised the slaughter of certain classes of infected animals, at the same time appointing 12 District Veterinary Officers to supervise the campaign. By 1930 the first eradication area was completed—the large island of Bornholm was clear of the disease. Between 1934 and 1951 318,000 reactors were slaughtered; the agricultural industry itself meeting three-quarters of the cost, the State less than one-fifth.

And to-day the proportion of attested cattle is, if one avoids decimal points, 100 per cent. It has been a triumph for Danish farmers, the great majority of whom have in recent years not hung back but pressed forward the campaign through their co-operative dairies; and, of course, a triumph for Danish veterinary surgeons.

Concurrent with the eradication of bovine tuberculosis among Denmark's cattle there has been a decline in the number of cases of tuberculosis among the human population. For several years it has been the accepted practice in Denmark to examine every child on reaching school age (seven years), when B.C.G. vaccine is used (but not compulsorily) if the child's reaction to the tuberculin test is negative. Similarly, B.C.G. vaccine is much used to protect the relatives of patients suffering from tuberculosis. By such means Denmark is emptying the beds in her sanatoria.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

SYSTEMATIC EFFECTS OF PROCAINE

Sir,—The following notes may be of some interest to the profession generally.

Using anaesthetised dogs D. Atanackovic and S. Dalgaard-Mikkelsen have found that intravenous injection of procaine:—

1. Paralysed the parasympathetic, and later, the sympathetic ganglia.

2. Prevented bradycardia due to the nicotinic action of acetylcholine, and in larger doses abolished the muscardinic effect of acetylcholine on the heart, and, incompletely, on the peripheral vessels.

3. Converted the state of hypertension in the atropinised animal to one of hypotension.

4. Showed curare-like action on intercostal diaphragmatic and skeletal muscles in that order.

5. Antagonised amongst others cholinergic substances, eserine.

This work would suggest that, depending on dosage rate, procaine has a very decided effect on the physiology of the anaesthetised dog. In addition, I have read somewhere that 30 to 70 mg. can correct arrhythmia in chloroform anaesthesia. The possibility of using procaine as other than a local anaesthetic exists.

How many other substances, easily obtained, widely and innocently used, have these other unknown effects?—Yours faithfully, J. CASSELLS, M.R.C.V.S., Black Horse Lane, Ipswich. *June 17th*, 1952.

REFERENCE

D. ATANACKOVIC & S. DALGAARD-MIKKELSEN (1951). *Arch. int. Pharmacodyn.* **85.** 1-16.

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SO-CALLED LUMBAR PARALYSIS IN GOATS

Sir,—I am glad to see in *The Veterinary Record*, No. 11, Vol. 64, March 15th, 1952, that Dr. J. R. Innes and others have challenged the statements of Dr. D. L. Bush.

In his report, paragraph 8, section (f), Bush states as follows: "calcium, phosphorus and magnesium therapy proved to be of value in over 100 treatments. Tetany and nystagmus were eliminated almost immediately following this treatment. Many of these cases, if caught early, responded in 15 to 20 minutes and animals would rise to their feet and begin to eat."

Dr. Bush has given no details as regard the particular compound used and the dosage given. But in order to test the validity of his claims of the response to injections of calcium, phosphorus and magnesium, I carried out the following experiment at this laboratory. Five paralysed goats were given 35 cc. of M.F.C. solution (May and Baker) intravenously.

M.F.C. Solution

Calcium borogluconate 25.0 per cent. w/v,
Magnesium hypophosphite 5.0 per cent. w/v,
Dextrose 20.0 per cent. w/v,
Distilled water to 100.1 per cent.

No immediate response was noticed. The dose was repeated after three days. Animals were kept under observation for two months during which time two out of the five goats died. No improvement was noticed in the other animals.—Yours faithfully, P. G. MALKANI, B.A., B.SC., M.R.C.V.S., Veterinary Research Laboratory, Peradeniya, Ceylon. *June 13th*, 1952.

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TUBERCULOSIS—HUMAN/BOVINE RELATIONSHIP

Sir,—As Mr. Pitcher is so obviously concerned with the welfare of mankind, may I suggest that he visits a hospital ward of children suffering from tuberculosis of bovine origin? I believe that he would then cease to weary us with statistics which are probably misinterpreted.—Yours faithfully, F. R. SPRATLING, M.R.C.V.S., 14 & 16, Queen's Road, Reading. *May 16th*, 1952.